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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,192	11/17/2003	Won-Ho Lee	8733.971.00-US	9556

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EXAMINER	
QI, ZHI QIANG	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,192	LEE, WON-HO	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 26, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 5-13 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,313,898 B1 (Numano et al) in view of US 6,449,025 (Lee).

Regarding claims 1–2, 5, 10-13 and 16, Numano discloses (col.16, line 3 – col.17, line 17; Figs. 21-23) that a multi-domain liquid crystal display comprising;

- first and second substrates (1 and 15);
- gate and data lines (2 and 7) arranged to across with each other on the substrate (1) to define a pixel;
- pixel electrode (12) on the substrate (1) (concerning claim 10);
- common electrode (18) on the substrate (15) (concerning claim 10);

- liquid crystal layer (14) between the first and second substrates (1 and 15);
- first and second alignment layers (13 and 19) having opposite rubbing directions on the first and second substrates (1 and 15) for causing liquid crystal molecules in the liquid crystal layer to form at least two domains having different liquid crystal alignment directions in the pixel;
- between the adjacent pixel electrode (12, 12a) having a slit that is an electric field distorting means on a domain boundary of the pixel and overlapping the two domains; and the electric field distorting means parallel to the boundary between the two domains (concerning claim 10);
- the slit (electric field distorting means) is formed at the pixel electrode (12) (concerning claim 11);
- the slit (electric field distorting means) is formed at the common electrode (18) (concerning claim 12).

Numano does not explicitly disclose that the electric field distorting means are located at an edge area and a central portion of the pixel.

Lee teaches (col.4, lines 33-65; Fig.2C) that the electric field inducing window (51) like a slit, i.e., the electric field distorting means, are located at an edge area and a central portion of the pixel (13) as shown in the Fig.2C, and such slit (51) is formed on a substrate as the pixel electrode is formed on the substrate (concerning claims 5 and 16); such that a multi-domain effect is obtained so as to widen the viewing angle. Lee also teaches such slit is possible formed in common electrode (17) that would have the same multi-domain effect.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify multi-domain liquid crystal display of Numano with the teachings of the electric field distorting means such as slit at an edge and central portion of the pixel, since the skilled in the art would be motivated for obtaining multi-domain effect so as to widen the viewing angle (col.4, lines 61-65).

Regarding claims 6 and 17, Numano discloses (col.16, line 3 – col.17, line 17; Figs. 21-23) that thin film transistor and pixel electrode (12) are formed on the substrate (1).

Regarding claims 7-9 and 18-20, Numano discloses (col.16, line 3 – col.17, line 17; Figs. 21-23) that the tin film transistor (TFT) having gate electrode, gate insulating layer (4) on gate electrode, semiconductor layer (5) on gate insulating layer (4), source/drain electrode (such as 8) on semiconductor layer (5); and color filter (17), black matrix (16), common electrode (18) are formed on substrate (15); and the black matrix (16) is formed on the boundary of the two domains.

3. Claims 3-4 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numano and Lee as applied to claims 1-2, 5-13 and 16-20 above, and further in view of US 6,710,837 B1 (Song et al).

Regarding claims 3-4 and 14-15, Numano and Lee teach the invention set forth above except for that the electric field distorting means comprising a protrusion.

Song discloses (col.5, lines 13-62; Fig.3B) that a linear protrusion (5) is formed on the substrate (1), such that the liquid crystal molecules (3) having two domains, and that compensate the viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display of Numano and Lee with the teachings of forming protrusion as taught by Song, since the skilled in the art would be motivated for enlarge the viewing angle as forming protrusion would compensate the viewing angle by the two domains of the liquid crystal molecules (col.5, lines 13-21).

Response to Arguments

4. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. The prior art of record such as reference Lee shows (col.4, lines 33-65; Fig.2C) a slit (electric field distorting means) formed in pixel electrode and in an edge area and central portion of the pixel as shown in Fig.2C, and obtaining a multi-domain effect so as to widen the viewing angle.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZQQ
Mike Qi
Patent examiner
June 14,2006